

F4U-1 CORSAIR



Catalogue no.: 0204, 0208

www.alfamodel.cz

Technical data:

Wingspan:	810 mm
Length:	655 mm
Wing area:	12,15dm ²
Electric motor:	series 280, 300 or AC (MP Jet, Mega, AXI...)
Weight:	max: 420 g
Controls:	Elevator, ailerons, motor

In February 1938 the US Navy issued specifications for a high-performance shipboard single-seat fighter. One of the types that took part in the contest was the V-166B of the Chance Vought company. The machine, designed under the leadership of Rex Biesel, was to be powered by the new Pratt & Whitney XR-2800-2 Double Wasp. This air-cooled double-row eighteen-cylinder radial had initially some 1350 kW (1830 HP) output, with the presumed increase to 1495 kW (2030 HP) to be reached within a year. The calculated performance was so good that in June 1938 the Navy signed with the Chance Vought company the order for the construction of the prototype, under the military designation XF4U-1.

To be able to utilise the power of the engine (roughly double the output of the engines used so far), a new propeller of 4,064 m diameter had to be developed. The necessary clearance between the whirring blades and the ground during the tail-up attitude on landing was provided by the "inverted gull" or W-dihedral wing. The "bent" wing enabled to design a relatively short (and therefore lighter) undercarriage, as well as to avoid the wing-fuselage fillets. The central part of the wing joined the circular fuselage at almost right angles, minimising thusly the interference drag, especially compared to a standard low-wing monoplane. Utilising the spot welding instead of rivets further saved weight, providing at the same time a very smooth surface of the airframe.

The Corsair prototype took off for the first time on 29th May, 1940. Since the very beginning it was apparent that an extraordinary fighter was born, and the few emergency landings and crashes during the tests could not change that. The Corsair was the first American fighter to exceed the 400 mph (644 km/h) speed in level flight, becoming the fastest US combat aeroplane. Before the series manufacture of the F4U-1 began, many minor and major changes took place. The most conspicuous alteration was moving the cockpit aft, above the wing trailing edge, and changing the armament to six wing-mounted 12,7mm (.5in) machine guns. The production was started not only at the Chance Vought company, but under licence at Brewster Aeronautical Corp. and the Goodyear Aircraft Corp.

The aircraft carrier deck qualification trials were at first unsuccessful due to the unsatisfactory operation of the undercarriage shock absorbers, and especially due to the very bad low-speed behaviour, caused mainly by the huge propeller torque and slipstream that made the machine prone to stall the port wing first without much warning. The machine was not cleared for deck operations and transferred to the US Marine Corps to operate from the land bases. Some design alterations solved these problems, as proved by the tests concluded in spring of 1943. The US Navy, however, allowed to operate Corsairs from the aircraft carriers in mid 1944 only, some nine months later than the British Fleet Air Arm began to use the Corsairs from their carriers. Apparently the comparison of the Corsair with the so far preferred F6F Hellcat helped here. It was proven that the Corsair is a better fighter as well as fighter bomber than the Hellcat and that it is comparable to it in the deck service. Very complimentary to the bent-wing bird were the results of one-to-one comparative tests of the Corsair versus the P-47, P-51, P-38 and P-39. The superiority of the Corsair over the Japanese aeroplanes is illustrated best by the kill rate of 2140 Nipponese machines lost against the loss of 189 Corsairs. The F4U-1s were manufactured in versions A, C and D, differing in the armament as well in external and internal detail such as the type of cockpit enclosure. The Chance Vought factory produced altogether 4699 Corsairs of the F4U-1 family, Goodyear Aircraft made 4007 Corsairs designated FG-1 and 2 and the Brewster Aeronautical some 735 machines known as F3A – these last ones were so badly built that they were kept stateside with training units only.

Catalogue no. 0204

The decal set enables you to build one of the machines serving in March 1945 with the VF-84 fighter squadron on the USS Bunker Hill. The machine coded 167 was flown on 25th February 1945 by the Squadron Commander, Lt.Cdr. Roger Hedrick, who shot two Nakajimas Ki-84 Hayate (Frank) and one Mitsubishi A6M-5 Reisen (Zero) on that day. His total score was 12 kills and 4 damaged enemy aircraft. The engine cowling was painted yellow for the first Tokyo raid to aid quick recognition, friend or foe.

The machine coded 530, coloured as per the drawing, operated in April 1945 with the VMF-312 Marines fighter squadron at Okinawa. The machine overall, including the engine cowling, was Glossy Sea Blue.

Catalogue no. 0208

The decal set enables you to build one of the machines serving during 1943/44 with the VF-17 fighter squadron.

„1" BIG HOG – Lt. Cdr. John T. Blackburn, Ondonga, October 1943

„3" – Ens. Frederik J. Streig, February 1944

„5" – Lt. Thomas Killefer, Ondonga, December 1943

„34" L.A. CITY LIMITS – Lt. Doris C. Freeman, Ondonga, November 1943

The model is not suited for complete beginners, but its control with ailerons and elevator would not bring problems to any modeller experienced enough with elevator/rudder control models, e.g. slow-flyers. The flight qualities and performance of this scale model of the F4U-1 Corsair are close to that of much larger models, i.e. they are more docile, and provide fine as well as colourful experience in the air.

The model kit you have bought has several noteworthy features:

- It is almost ready to fly: you have to apply decals, install the propulsion unit and the RC equipment.
- You can utilise the kit's box as the transport and storage container for the finished model.
- The model is moulded from extruded polystyrene foam with a tougher surface layer, making the model more resistant to surface damage. All exposed places are also covered by additional plastic reinforcements. The strength/weight ratio of the model is high, therefore the danger of damage in normal operation is very low.
- When designing this model the maximum attention was devoted to its aerodynamic layout (e.g. the semi-symmetrical wing section, the symmetrical horizontal tail section were used), ensuring high aerodynamic finesse, with the resulting wide band of operational speeds and docile flying characteristics typical for much larger models.
- The range of proven power units offered enables to build a scale model of flight performance corresponding with that of the best slow flyers, as well as with the fully aerobatic models.
- To control the model you need the RC equipment suitable for controlling the slow-flyers – it would enable you to fly majority of the aerobatic figures (with the possible exception of those that require the rudder control).
- One of the decisive factors, affecting the flight performance and behaviour of the model, is its weight. The specified maximum weight should in no case be exceeded – the flight behaviour of heavier models deteriorates accordingly.
- Due to the brisk pace of development of the propulsion units and batteries, we recommend that you always check the maximum current drain and choose a controller that corresponds to that current.

Finishing the model

It is a simple task, yet we ask you to read and follow the subsequent text carefully.

The decals

The model is sprayed with colours making up its basic camouflage scheme. The codes and markings are on the waterslide decals. Their primary advantage is the negligible weight and a minimum risk of damaging the model during application. They require, however, an attention and care. Therefore we recommend you to follow the subsequent tips:

- The larger decals that are to fit to a double-curvature surface need to be cut radially at several places around the circumference for a better fit.
- Dip the decal cut out from the sheet with its backing paper in a lukewarm water for about 5 seconds, then leave it to soak through on a flat non-absorbent surface (glass plate etc.).
- You may substantially increase the adhesion of the dried decal to the model by applying wallpaper glue to the area where the decal will be placed. However, ensure in advance that the glue would not create blotches or lumps when it dries – this is why the white (PVA) glues are usually not suitable.
- Once the backing paper is sufficiently soaked (i.e. the decal moves easily on it), slide the decal over the edge of the backing paper about 5 mm, hold it with your fingers in required place on the part to be decorated and pull the paper from beneath the decal. If the decal does not slide easily enough, apply some more water around it with a paintbrush; this method would help you to replace the wrongly-applied decal, too.
- Using a soft cloth or, rather a polyurethane foam roller, carefully smooth out the decal, gently squeezing the excess glue and any air bubbles from the centre of the decal to its outer edge. **Do not squeeze out all of the glue!** Once the glue dries, i.e. in a few hours, the decals would shrink somewhat and adhere snugly to the surface.
- To increase the adhesion of the decals, you may use a decal setting solution, available for plastic scale modelling. Check that solution does not attack the styrofoam and follow the directions for its use.
- The model could be oversprayed with a thin layer of transparent gloss or semi-matte acrylic or synthetic varnish (avoid spraying the transparent cockpit canopy matte, indeed) to suit your ideas regarding the surface finish of the real aeroplane. It is absolutely necessary to check beforehand that the varnish does not attack the polystyrene foam. To keep the weight down, spray varnish very sparingly, i.e. as a mist only.

A) RC equipment

The general layout of the electrical connection is on the diagram. We strongly recommend you to assemble and connect the RC equipment outside the model and check its function. Observe the recommendations of manufacturers as listed in the directions for use for the respective components. Check the compatibility of the receiver with the crystal used – the over-the-land range test of the transmitter, albeit it may seem unnecessary nowadays, may save you so much more than it would cost...

B) Power unit(motors with MPJet gearbox or MPJet outrunner 28/7...)

- Power unit **1** is attached to the motor bulkhead by three screws **2**.

- The engine cowling **3** could be tack-glued to the fuselage by the PU glue or Epoxy or by a piece of adhesive tape. If you find that the motor overheats, it is necessary to improve its cooling. Either enlarge the opening for the propeller shaft, or cut out some auxiliary openings in place of the moulded cylinders. To provide an outlet for the cooling air if necessary, cut away the foam fuselage wall at the tailwheel. If using an AC outrunner motor, enlarge the central opening in the engine cowling.
- Slide the propeller back plate **4** to the gearbox(motor) shaft, install the propeller **5** to the back plate, the washer **6**, (use the washer from the kit, not the one from the power unit, ensure the correct orientation) and tighten the complete assembly with the nut **7**.
- Snap the propeller boss **8** to the washer **6**. When snapping the boss on, hold fast the propeller, not the model.
- Check that the propeller rotates freely, without binding between the rotary and stationary parts.

C) Aileron control

The aileron servo should be powerful enough to overcome the friction in the control circuit – we recommend to utilise a servo of more than the 15 Ncm minimum torque. You can minimise the friction in the control cables by removing them from the tubes and lubricating them lightly with thin oil, e.g. the WD-40.

- Place the connector **9** into hole in the servo single arm, at the distance of about 8 mm from the axis of servo's arm rotation. If the openings in the servo arm are too large, it is better to drill a new one of 1 mm diameter rather than bushing-out the old ones.
- Insert a 6mm long piece of tubing **10** into the hole in the connector.
- Insert the connector with the servo arm to the control rods, first to one, then to the other (**fig. C1**).
- Modify the wing top skin opening as necessary for the size of the servo used; enlarge it carefully to the dimensions required, using a sharp modelling knife – if need be, open up also the bottom wing skin - the servo should fit into the opening tightly. The servo could be placed in the wing in an inclined or horizontal position (**fig C2**). Insert the servo into the wing opening and place it so that once the servo arm is inserted on its shaft (the axis of the servo arm should be parallel with the longitudinal axis of the servo) the control rods form a smooth curve, so that the set-screws **11** and **12** could be tightened. If the servo is to protrude from the upper contour of the wing section, it has to be in the area where the fuselage is open at the bottom. Devote a maximum attention to the positioning/attachment of the servo, ensuring thus a smooth control of the model.
- Secure the servo against movement by applying a thin layer of PU glue or Epoxy around the perimeter of the opening in the top and bottom wing skin – in case the servo needs to be removed it is easy to pry it free without damage.
- Tighten lightly the screw **12** so that the aileron trailing edges would be some 1,5 to 2,0 millimetres above the wing trailing edge (**fig. C3**).
- Check function of ailerons: they should be at the maximum deflection of about 10 mm at the maximum deflection of the servo (**fig. C3**) – check for the correct sense of their deflection – it has to correspond with the deflection of the control stick! If they are not moving correctly, and you could not program the sense of the servo movement in the RC set, change as necessary either the position of the control rods in the control circuit arms or of the connector on the servo arm. Only then secure the connector against letting loose by the spring washer **13** inserted from below (the servo arm is outside of the model; use a thin tube, such as the ball point pen refill), and then secure the servo arm itself by the screw **11**. Readjust the correct position of the ailerons and tighten the screw **12**. Secure the control rods against disconnecting from the control arm by gluing a piece of tubing onto them (**Fig. C4**).
- You can secure the connector by gluing a piece of tubing instead of the spring washer **13**. If the tube is glued well, this simple method is fully satisfactory and, in case the disassembly would be needed, the tube would be simply cut away.

D) Elevator control

For the elevator control a servo of the minimum 7 Ncm torque is required. Both moving surfaces are interconnected by a glued-in coupler. If one of the elevator halves deflects excessively (outside of the recommended angles), the coupler may become loose and the deflections (especially the maximum ones), may differ substantially. Restore their stiffness by gluing (Epoxy) a "U"-shaped connector made of steel wire of 1,5 mm diameter.

- The servo is glued to the starboard (right) opening in the servo tray (plate) using CA, PU or Epoxy glue. Place servo so that its screws **12** and **14** could be tightened.
- Insert the connector **9** into the hole some 7 mm distant from the axis of rotation of the shaft of the single-sided servo arm. Drill a new hole if necessary, insert a 6 mm long piece of plastic tubing **15** into the hole in the connector. Slide the assembly onto the control rod and place the arm on the servo shaft so that it would be about perpendicular to the elevator control rod axis (**see fig. D1**). Glue (PU, Epoxy) the elevator control rod outer tube to the inside fuselage wall above the longeron.
- Tighten slightly the connector bolt **12** – the servo arm and the elevator should be in neutral position.
- Check that the maximum deflection (throw) of the servo corresponds to the elevator deflection of about 10 mm each way (**fig. D2**) – check that the sense of elevator deflection is correct and corresponds to the sense of movement of the control stick! If the deflection is not correct, and you can not program the servo by RC set

programming, change as necessary either the position of the control rod in the control lever, or the position of the connector on the servo arm. Only then secure the connector from falling out with the flexible washer **13**, slid on from below (the servo arm should be outside of the model), or by gluing a piece of tubing, and secure the servo arm by tightening the screw **14**. Set the elevator to correct position and tighten the bolt **12**. Secure the control rod in the control lever by gluing a piece of tubing onto it (**fig. D3**).

The battery is attached to the base plate by self-adhesive Velcro strips. The receiver is attached to the styrene wing/fuselage junction using the same self-adhesive Velcro strip. The receiver antenna could be led out from the fuselage belly behind the wing and either attached to the fuselage by adhesive tape or left to stream freely. It is recommended to check with the motor running (especially at the maximum power) that no interference (noise jamming) of the RC receiver takes place - it would manifest itself by oscillating of servos. In that case move the receiver to the fuselage sidewall forward or even better rearward of the cockpit, as far from the battery pack and power leads as possible.

To facilitate the transport and storage, the wing of the model is detachable. The fuselage and wing are joined by the screw **16** – tighten with care.

If you wish to fit the pilot into the cockpit, remove the cockpit canopy carefully (it is tack glued in the corners), install the glued and painted pilot bust and re-glue it back.

E) Flying the model

Balance the complete assembled model by shifting the position of battery pack along the base plate. The prescribed position of the CG is marked on the fuselage bottom cover surface by transverse lines (**fig. E**). When balancing the model, support it with your fingers. The well-balanced model stays level or slightly nose-down. Mark the correct position of battery pack on the base plate - it is best done at home; also check the RC equipment – i.e. the sense and magnitude of deflection (throw) of the ailerons and elevator and the function of the controller.

First, glide-launch the model over taller grass to cushion its landings and check its reaction to controls. If you can, set the non-linearity on the transmitter to 50 % both for the ailerons and the elevator. The powered flight will differ according to the power unit – the "280" will make the start just a bit more lively than with a slow-flyer, the AC motor will try to jerk the model from your hand- be ready for a pronounced torque from the propeller in slow flight when the controls are less effective(there is no need to use full power during the launch!).

Once trimmed in powered flight, try the marginal regimes – especially the slow flight and stall behaviour of the model. Once you become accustomed to the model, you may return the ailerons to normal zero setting. The model of the F4U-1 Corsair, compared to other WW II fighter aircraft, has excellent flight properties and would stand a lot of abuse. But it is no slow-flyer/fun-fly machine or an aerobatic special and you have to adjust the piloting to this fact. You could be surprised by the reactions to the excess movement of the elevator, so please try these figures at higher flight altitudes.

Once the Corsair passed the test-flying period, you need not to wait for a calm weather. Thanks to the wide band of available speeds and to the very good controllability it will be soon your decision when to go flying outdoors.

We wish you many happy landings

Alfa Model. Ltd.

A list of parts and tools necessary for finishing the model, that are not supplied in the kit:

- Polyurethane (PU) or five-minute Epoxy glue, CA glue
- Modelling knife, screwdrivers, transparent self-adhesive tape, 1 mm diameter drill bit.
- Power unit with controller and propeller, battery pack, the tested recommended combinations are listed below.
- At least a three-channel RC set with two micro servos (up to 10 g weight) and a miniature receiver (up to 10 g weight).
- Extension cable (150 mm) to attach the aileron servo to the RC receiver.
- Battery charger.

Recommended power units

Catalogue no.	Motor/gearbox/ controller/propeller	Battery pack
5201	Speed 280 / MPJ 3.75:1 / TMM0810 / APC9x6SF	9.6V, min 6A
5204	Speed 300 / MPJ 5:1 / TMM0810 / APC9x6SF	7.2V, min 10A
	MPJ AC 25/25-26 Mk.2 / MPJ 5:1 / TMM1210-3 / APC9x6SF	7.2-9.6V, min 10A
	MPJ AC 28/7-30D / - / TMM1812-3 / APC9x6SF	7.2V, min 15A
	MPJ AC 28/7-35D / - / TMM1210-3 / APC9x6SF	7.2-9.6V, min 10A
	MPJ AC 22/7-45D / - / TMM1812-3 / APC9x6SF	9.6V, min 15A
	MPJ AC 22/7-60D / - / TMM1210-3 / APC9x6SF	9.6V, min 10A
	MEGA RC 400/15/5 / - / TMM1210-3 / APC9x6SF	7.2V, min 10A
	AXI 2208/26 / - / TMM1210-3 / APC9x6SF	7.2V, min 10A

ALFA MODEL s.r.o., Revoluční 1003/3, 110 00 Praha 1, Czech Republic, www.alfamodel.cz